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A TAXONOMIC REVISION OF THE *DISTINCTA* GROUP OF THE WOLF-SPIDER GENUS *PARDOSA* IN AMERICA NORTH OF MEXICO (ARANEIDA, LYCOSIDAE)

BEATRICE R. VOGEL[1]
UNIVERSITY OF COLORADO MUSEUM, BOULDER, COLORADO

INTRODUCTION

The *distincta* group of the genus *Pardosa* in America north of Mexico is a group of six closely related species. Their phyletic relationship is indicated by similar color pattern and genital morphology, and five of the six species occupy the "same" habitat. Five of the species, *P. montgomeryi*, *P. orophila*, *P. utahensis*, *P. xerophila* and *P. yavapa* are found in the Rocky Mountain states from New Mexico north through Wyoming. *P. distincta* is found throughout the Rocky Mountains, including Canada, and eastward to New England. While *P. distincta* is one of the most frequently encountered *Pardosa* species in the Rocky Mountains, the other five species of the group are rarely seen because of their size and restricted choice of habitat. This paper is a taxonomic review of the group.

[1] Present address: Department of Biology, Yale University, New Haven, Conn.

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DISCUSSION

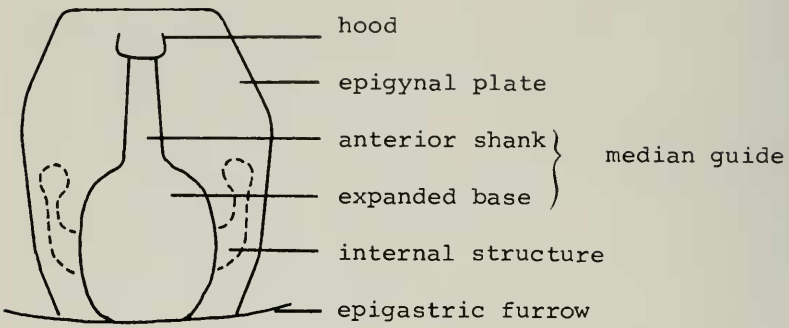
The *distincta* group as defined here includes the following species: *Pardosa distincta*, *P. montgomeryi*, *P. orophila*, *P. utahensis*, *P. xerophila;* and *P. yavapa*. These six species are characterized by a distinctly light median longitudinal band on the dorsal side of both cephalothorax and abdomen, in at least the females; melanism sometimes obscures this marking in the males. The median band begins near the posterior end of the ocular quadrangle and extends caudad the length of the spider. The edges of the median band are rather sharply delineated from the bordering dark bands. There is usually a pair of lighter bands ectal to the dark bands on the cephalothorax, which are in turn bordered by dark bands, more or less narrow, at the edge of the carapace. Laterally, the abdomen is lighter, but there are no well-defined lateral bands. At the anterior end of the abdomen, in the median band over the heart, is a diamond-shaped mark, with its anterior corner truncated. The diamond is outlined in dark gray, brown or black, and its

interior may be dark or the color of the median band. The males of *P. distincta*, *P. xerophila* and *P. yavapa* sometimes have enough melanism to obscure the median band, especially on the abdomen, but occasionally on both tagmata. Even so, the characteristic pattern is apparent on immature males, or in mature males at the beginning of their ultimate instar.

Close similarities of genital structure also characterize the group. The terms used for the male palpus are the conventional ones, and the terms used to describe parts of the female genitalia are shown in figures 1 and 2.

The epigynum is characterized by a median guide elevated above the epigynal plate (that is, toward the viewer in a ventral view), and the basal portion of the guide is expanded for about $\frac{1}{4}$ to $\frac{2}{3}$ the length of the guide. At the anterior end of the median guide is a small hood which extends over the guide. The lateral sides of the epigynum are not elevated above the abdomen and the epigastric plate has no rim other than the hood. The openings to the internal structures are covered by the expanded base of the median guide. The two halves of the reproductive system are not connected by a common atrium. The darker sclerotization of the internal parts of the reproductive system shows through the epigastric plate, ventral view. In a dorsal view, the atria are above (toward the viewer) the lateral portions of the basal expansions of the median guide. The atria connect to the seminal receptacles which are at about a 45° angle to the longitudinal axis of the animal. Deviations are in *P. orophila* where they make a greater angle with the axis, and in *P. yavapa* where the angle is less. The seminal receptacles are somewhat dumbbell-shaped, and their anterior ends lie parallel to the longitudinal axis.

The median apophysis of the male palpus is quite long and slants diagonally across the ventral side to the distal end of the palpus. The tip of the median apophysis turns dorsad, just over the edge of the cymbium. The median apophysis is more or less curved at the middle, or with a bulge about the middle of its length. There is a short hook-shaped process at the base of the median apophysis which is turned ventrally. The embolus is of moderate length, slender, and crosses the palpus at about the middle, at right angles to the long axis of the palpus. The tegu-



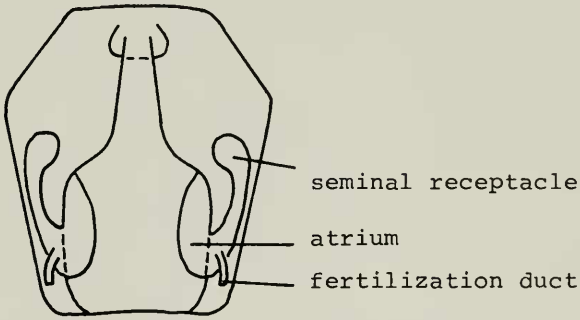


Figure 1. Epigynum (diagrammatic), ventral.
Figure 2. Epigynum (diagrammatic), dorsal.

lum is cup-shaped and partly encircles the base of the median apophysis. The patella of the pedipalp is not particularly enlarged, and the palpus is not conspicuously hairy.

The spiders of the *distincta* group are small, with average length about 5 mm, but individuals of *P. distincta* 7 mm long are commonly encountered. *P. distincta* is found in moist habitats: marshes, stream margins or meadows which remain green. *P. orophila*, *P. utahensis* and *P. yavapa* are found generally on dry slopes, underneath pine trees. There is no obvious difference in habitat preference of these species, and any of them may be found in suitable location within their ranges. *P. yavapa* is found alone where the pine needle litter is two or three inches deep, or with *P. orophila* or *P. utahensis* where the pine litter

does not prevent growth of grass or other vegetation. In Boulder County, Colorado, the writer has taken *P. orophila* only in the company of *P. yavapa*, although there sometimes appears to be local segregation. *P. utahensis* is usually found alone, but it may occur with *P. yavapa*. *P. utahensis* can be found on open prairies and under sage brush, as well as in pine forests. Of the four species mentioned above, *P. utahensis* tolerates the hottest, driest conditions. *P. orophila* and *P. utahensis* do not seem to occur together. Near forest streams, it is possible to collect *P. distincta*, *P. utahensis* and *P. yavapa* together, at least in adjacent microhabitats. The isolating mechanisms of the species must be ethological and mechanical. No hybrids have been reported, although these species have ample geographic and seasonal opportunity to hybridize. *P. montgomeryi* and *P. xerophila* are not included in the above discussion since the author has had no field experience with them. Dr. Gertsch states (personal communication) that they occupy the same dry habitat in a pine forest as does *P. yavapa*. Throughout the common range of these three species, sympatric occurrence of any two species is more common than solitary occurrence of a species. Occasionally all three occur together.

The *distincta* group is closely related to several other species of *Pardosa*. *P. delicatula*, *P. milvina*, *P. mulaiki* and *P. pauxilla* are all small spiders and have epigyna similar to those in the *distincta* group. *P. delicatula* and *P. milvina* may be excluded because the palpi of the males of these two species are unlike the palpi of the *distincta* group. The palpi of males of *P. mulaiki* and *P. pauxilla* are similar to those of the *distincta* group, but their median apophyses are quite short, not reaching the edge of the cymbium. The *distincta* group is thus limited to the six species which resemble one another in the genitalia of both sexes, in color pattern, habitat, and frequent sympatric occurrence.

Selected measurements of the species are given in Table 1. The figure given is the average of measurements taken from ten specimens (unless otherwise noted) which were collected at the same time from one place. An ocular rule was used for measuring, not permitting accuracy greater than tenths of millimeters. Measurements of eye relationships have been omitted because

TABLE 1. (all measurements are in mm)

Locality	Species & sex	N	Total length	Indiv. max.	Indiv. min.	Carapace length	Carapace width	Leg I	Leg II
COLO. Conejos Co.	*P. distincta* ♀	10	5.4	6.4	4.7	2.4	1.8	7.3	7.0
23 mi. W. Antonito	*P. distincta* ♂	10	4.8	5.1	4.5	2.5	1.8	7.7	7.3
8 July 1962									
MONT. Carbon Co.	*P. distincta* ♀	10	5.6	7.1	4.9	2.4	2.0	7.9	7.6
East Rosebud Lake	*P. distincta* ♂	10	5.2	5.7	4.6	2.6	2.0	8.2	7.9
19-22 June 1962									
NEW MEX. Otero Co.	*P. montgomeryi* ♀	4	4.5	5.2	3.7	2.2	1.5	6.9	6.0
Camp Mary White									
Aug 1934									
ARIZ. Cochise Co.	*P. montgomeryi* ♂	4	3.7	3.9	3.5	1.9	1.3	4.9	4.6
Rustler's Park									
July 1955									
COLO. Boulder Co.	*P. orophila* ♀	10	5.0	5.6	4.3	2.1	1.6	6.2	5.9
Eldorado Springs	*P. orophila* ♂	10	4.3	4.8	4.1	2.1	1.6	6.3	5.8
9 June 1963									
COLO. Boulder Co.	*P. utahensis* ♀	10	5.2	5.9	4.8	2.3	1.6	6.7	6.3
4 mi. SW. Boulder	*P. utahensis* ♂	10	4.8	5.1	4.4	2.3	1.6	6.6	6.5
19 June 1963									
COLO. Boulder Co.	*P. yavapa* ♀	10	5.0	5.3	4.8	2.3	1.7	6.4	6.1
Eldorado Springs	*P. yavapa* ♂	10	4.2	4.7	3.4	2.0	1.6	6.5	6.2
20 May 1962									
ARIZ. Apache Co.	*P. xerophila* ♀	4	5.5	5.8	4.8	2.6	1.9	9.0	8.4
White Mt. Res. E. of McNary									
8 July 1940									
NEW MEX. Otero Co.	*P. xerophila* ♂	1	4.1	—	—	2.0	1.5	—	—
Camp Mary White									
Aug 1934									

TABLE 1. (continued)

Locality	Species & sex	Leg III	Leg IV	Femur IV	Tibia & patella IV	Metatarsus IV	Tarsus IV	Tibia & patella I	Vent. spination tibia I
COLO. Conejos Co. 23 mi. W. Antonito 8 July 1962	*P. distincta* ♀	7.0	11.0	2.7	3.2	3.3	1.6	2.5	2-2-2
	P. distincta ♂	7.2	10.6	2.5	3.1	3.2	1.6	2.5	2-2-2
MONT. Carbon Co. East Rosebud Lake 19-22 June 1962	*P. distincta* ♀	7.6	11.8	2.9	3.5	3.6	1.7	2.7	2-2-2
	P. distincta ♂	7.8	11.5	2.8	3.4	3.5	1.7	2.9	2-2-2
NEW MEX. Otero Co. Camp Mary White Aug 1934	*P. montgomeryi* ♀	6.1	9.0	2.3	2.7	2.6	1.2	2.2	2-2-2
ARIZ. Cochise Co. Rustler's Park July 1955	*P. montgomeryi* ♂	4.6	7.0	1.7	2.2	1.9	1.1	1.7	2-2-2
COLO. Boulder Co. Eldorado Springs 9 June 1963	*P. orophila* ♀	5.9	9.5	2.4	2.9	2.7	1.4	2.1	2-2-0
	P. orophila ♂	5.7	8.9	2.2	2.6	2.6	1.4	2.0	2-2-2
COLO. Boulder Co. 4 mi. SW. Boulder 19 June 1963	*P. utahensis* ♀	6.4	9.9	2.5	3.0	2.9	1.4	2.3	2-2-2
	P. utahensis ♂	6.5	9.5	2.3	2.8	2.8	1.5	2.3	2-2-2
COLO. Boulder Co. Eldorado Springs 20 May 1962	*P. yavapa* ♀	6.2	9.5	2.4	2.9	2.8	1.3	2.3	2-2-2
	P. yavapa ♂	6.2	9.1	2.2	2.8	2.8	1.4	2.3	2-2-2
ARIZ. Apache Co. White Mt. Res. E. of McNary 8 July 1940	*P. xerophila* ♀	8.3	11.7	3.0	3.7	3.9	1.7	3.1	2-2-2
NEW MEX. Otero Co. Camp Mary White Aug 1934	*P. xerophila* ♂	—	8.5	2.0	2.6	2.5	1.4	2.1	—

the writer feels that they are not significantly different in this group from the genus as a whole, and ocular placement is not one of the important characters in recognizing these species. For the same reason measurements of labium and sternum are omitted.

It is interesting to note the effect of latitude on the size of *P. distincta*. The females in the population from about 45°N (Carbon County, Montana) average 0.2 mm longer and the males average 0.4 mm longer than those in the population from about 37°N (Conejos County, Colorado). The average length of carapace is the same for female of both groups, but the northern males average 0.1 mm longer carapace. The legs of the northern group are longer than the legs of the southern group: about 0.6 mm for the first three pairs of legs, and 0.8-0.9 mm for the fourth pair. Southern males show greater melanism than the northern ones, being generally much darker, and the pattern more obscure. Western males, in general, are much darker than Eastern ones, especially those from New England. There, the males and females of *P. distincta* are the the same color.

The colors given below, except for *P. xerophila*, are from specimens kept in alcohol not more than two years. The patterns and colors are very useful in separating species, but it must be remembered that the colors change in alcohol. While there is normally no marked change for about five years, specimens older than this tend to become brownish. Reds and yellows are soluble in alcohol and are the first colors to change or disappear. Some of the subcutaneous white markings seem fairly permanent, and the hair colors show little change. The basic patterns can still be discerned in older specimens, even though the colors have faded.

ARTIFICIAL KEY FOR SEPARATING THE SPECIES OF THE *DISTINCTA* GROUP OF GENUS PARDOSA

1. Females 2

   Males 7

2. With a bright cherry red spot posterior to eyes, and with a mustache of white hairs on sides of face ..... *orophila*

   No spot of color posterior to eyes, or if present never cherry red, mustache not of white hairs ... 3

3. Median band of cephalothorax tapering to nearly a point at posterior end ..... *yavapa*

   Median band with parallel sides or tapering slightly but never to a point 4

4. Heart mark on dorsal side of abdomen brown or gray, color darker than median band 5

   Heart mark rosy or yellow, color not especially darker than median band 6

5. Median band of abdomen posterior to heart consisting of paired triangles or circles; expanded base of median guide large, more than ½ the length of guide ..... *utahensis*

   Median band posterior to heart without markings; expanded base of median guide not large, less than ½ the length of guide ..... *montgomeryi*

6. Expanded base of median guide large and round, about ½ the length of guide; epigynal plate small ..... *distincta*

   Expanded base of median guide small and round, about 1/3 the length of guide; epigynal plate extensive ..... *xerophila*

7. Median apophysis of palp large, with strong longitudinal corrugations; tip blunt and extending past retrolateral margin of cymbium so as to be conspicuous in dorsal view ..... *distincta*

   Median apophysis without strong corrugations and not conspicuous in dorsal view 8

8. With bright cherry red spot posterior to eyes: median apophysis with slender base and prominent median bulge ..... *orophila*

   No distinct color spot posterior to eyes, or if spot present, never bright cherry red; median apophysis without slender base and prominent median bulge 9

9. Median band of cephalothorax tapering to nearly a point at posterior end ..... *yavapa*

   Median bands of cephalothorax with parallel sides, or tapering slightly, but never to a point .. 10

10. Spider mainly dark; median band on cephalothorax and abdomen not distinct ..... *xerophila*

    Spider with light and dark bands; median band of cephalothorax and abdomen distinct 11

11. Median apophysis of palp arched anteriorly, without a bend at base; embolus not concealed by tegulum ..... *utahensis*

    Median apophysis with a conspicuous bend at base, not arched anteriorly; embolus generally concealed by tegulum ..... *montgomeryi*

SPECIES DESCRIPTIONS

Pardosa distincta (Blackwall)

Lycosa distincta Blackwall, J., 1846, Ann. Mag. Nat. Sci. (1) 17:32. Marx, G., 1890, Proc. U.S. Nat. Mus. 12:561.

Pardosa pallida Emerton, J. H., 1885, Trans. Conn. Acad. Arts Sci. 7:496; 1902, The common spiders of the United States, Boston:82. Peckham, G. W. 1887, J. Morph. 1:396-400, 418; 1895, Trans. Wisc. Acad. Sci. Arts Let. 10:237. Marx, G., 1890, Proc. U.S. Nat. Mus. 12:565. Banks, N., 1892, Proc. Acad. Nat. Sci. Phil. (1):68; 1895, Ann. N.Y. Acad. Sci. 8:429; 1916, Proc. Acad Nat. Sci. Phil. 68:81 (=*emertoni*= *distincta*). Slosson, A. T., 1898, J. N.Y. Ent. Soc. 6:248. Britcher, H. W., 1903, Proc.

Onondaga Acad. Sci. 1:129. Montgomery, T. H., 1903, Proc. Acad. Nat. Sci. Phil. 55:653; 1904, Proc. Acad. Nat. Sci. Phil. 56:267.271. Bryant, E. B., 1908, Occ. Pap. Boston Soc. Nat. Hist. 7:90.

Pardosa emertoni Chamberlin, R. V., 1904, Canad. Ent. 36:175 (n. nov. pro *pallida* Emerton, praeocc.); 1908, Proc. Acad. Nat. Sci. Phil. 172,190. Banks, N., 1907, Rep. Indiana Geol. Surv. 31: 172,174, 180; 1910, Nat. Hist. 29:570. Comstock, J. H., 1913. The spider book, New York: 651, 653, 657. Emerton, J. H., 1920, Trans. Roy. Canad. Inst. 12:330; 1924, Ent. News 36:124. Bishop, S. C., and C. R. Crosby, 1926. J. El. Mitch. Sci. Soc. 41:209. Crosby, C. R., and S. C. Bishop, 1928, Cornell Univ. Agr. Exp. Sta., Mem. 101:1068. Chickering, A. M., 1932. Pap. Mich. Acad. Sci. 17:351. Chamberlin, R. V., and W. Ivie, 1933. Bull. Univ. Utah, 23(4):49. Kaston, B. J., 1935. J. Morph. 58:191; 1936, Ent. Amer. (n.s.) 16:103, 107.

Lycosa pallida Franganillo, P., 1910, Broteria 9:12 (?) (species uncertain).

Pardosa distincta Banks, N., 1910, Bull. U.S. Nat. Mus. 72:59 (=*pallida*=*emertoni*). Petrunkevtich, A., 1911, Bull. Amer. Mus. Nat. Hist. 29:570. Crosby, C. R., and S. C. Bishop, 1928, Cornell Univ. Agr. Exper Sta. Mem. 101:1068. Chickering, A. M., 1934, Pap. Mich. Acad. Sci. 19:578. Gertsch, W. J., and H. K. Wallace, 1935, Amer. Mus. Novit. 749:1. Kurata, T. B., 1937, Canad. Field Nat. 51:115. Kaston, B. J., 1938, Bull. Conn. Geol. Nat. Hist. Surv. 60:184; 1948, Bull. Conn. Geol. Nat. Hist. Surv. 70:332. 333. Gertsch, W. J., and W. L. Jellison, 1939, Amer. Mus. Novit. 1032:3. Levi, H. W., and L. R. Levi, 1951, Zoologica 36(4):225. Levi, H. W., and H. M. Field, 1954, Amer. Mid. Nat. 51(2):455. Lowrie, D. C. and W. J. Gertsch, 1955, Amer. Mus. Novit. 1736:5.

Female. Appearance in alcohol. The general appearance of the dorsal side of the spider is pale yellow marked with gray or brown. Eye region dusky to about posterior eye row. Carapace generally with five longitudinal bands; median band light, inner lateral bands dark, outer lateral bands light, with marginal dark line. Median band of abdomen pale yellow as on carapace, with dark grey outline of diamond at anterior end. Region of diamond tending to be rosy or yellow ochre. Lateral bands of abdomen dark grey or brown. If the spider is light enough there appears another pair of pale

outer lateral bands with indistinct edges. Ventral side of female pale and not conspicuously marked, except for seven dark spots on sternum between adjacent coxae of walking legs. Abdomen with two darkish lines on posterior end, extending toward spinnerets. Spinnerets pale. Chelicerae, palpi and legs pale and unmarked. Abdomen with subcutaneous patches of white pigment, especially noticeable on ventral side.

Epigynum. (figs. 5, 6) Anterior shank of median guide fairly stout and straight-sided. Expanded base about 2/3 the length of guide, with rounded shoulders convex anteriorly. Hood with straight posterior edge and cordate anterior edge.

Male. Appearance in alcohol. The male ranges in color from that of the female, especially in eastern North America, to nearly completely black, in the southern Rocky Mountains. A pale male has, in addition to the markings of the female, a dark V on the sternum and the seven spots between coxae are larger and more conspicuous. Palpi pale, but clothed with darker hairs. Ventral abdominal lines extending farther anteriorly and heavier than in the female. Distal end of first metatarsus sometimes with dark ring. A dark male, the longitudinal bands of the carapace almost entirely obscured. Median band reduced to a brownish patch at posterior end of carapace, and outer lateral bands reduced to brownish patches; carapace otherwise black. Abdomen dark grey, but black outline of heart and two black bands lateral to median band discernible. Sternum entirely black or light with black blotches. Femora black with an irridescent blue sheen; more distal segments light or varyingly marked with black. Melanism seems to be a secondary sexual character, since the immature males resemble the females in color. The males of *P. distincta* are the most often variable in color of the species in the *distincta* group, color being dependent on geography and probably on age of instar. Some populations have males with all degrees of melanism.

Palpus. (figs. 17, 20) Palpus with large median apophysis slanting diagonally across to distal end of palpus, and extending over edge of cymbium. Median apophysis with conspicuous bend in the middle of its length and conspicuous longitudinal corrugations. Tip of median apophysis turning dorsad. Terminal apophysis a small pointed process. Tegulum rather deeply cut out around base of median apophysis. Embolus with base near anterior end of bulb, extending caudad, turning to cross bulb at right angles to its long axis, tip hidden behind median apophysis.

Diagnosis: The corrugations on the median apophysis distinguish *P. distincta* from all other members of the group. The rounded anterior lobes on the expanded base of the median guide of the epigynum serve to distinguish the female from all other members of the group. Some of the males of *P. distincta* may superficially resemble *P. sternalis,* which is also quite black, but the palpi are clearly different. The embolus of *P. sternalis* is strongly bowed in an anterior direction as it crosses the bulb, and in *P. distincta* the embolus is straight.

Type locality: Vicinity of Toronto, Canada. (♀)

Distribution: *Pardosa distincta* occurs throughout the Rocky Mountains from Arizona and New Mexico north into Alberta; eastward across north central United States and Canada, and in the New England states.

Data from material examined: COLORADO. Boulder Co.: numerous localities. Chaffee Co.: O'Haver L., 11,000′, Sawatch Mts., 5 July; Cottonwood L., 9800′, Sawatch Mts., 10 July. Conejos Co.: 7 mi. W. Antonito, 9 July; 23 mi. W. Antonito, 9 July. Custer Co.: Beaver Crk. Springs, 3 mi. E. Pringle, 7 Aug.; Lake Crk., 9000′, Sangre de Cristo Mts., 1-3 Aug.; Sangre de Cristo Mts., 12 July. Douglas Co.: Cherry Crk., at Colo. Hwy. 83, 26 Apr. Eagle Co.: 3 mi. NE. Dowd, 29 July. Fremont Co.: Hayden Crk., 7900′, Sangre de Cristo Mts., 11 July. Gilpin Co.: Lump Gulch, 1 Aug. Grand Co.: 1 mi. E. Fraser, 20 June; Troublesome Crk., 11 July. Gunnison Co.: numerous localities. Hinsdale Co.: 45 mi. W. Creede, 10,000′, 16 July; San Cristobal L., 9200′, San Juan Mts., 2 Aug.; 3 mi. E. Slumgullion Pass, 12,000′, 6 July; Lake Fork of Gunnison R., 13 mi. SW. Lake City, 12,000′, 7 July; 6 mi. SE. Lake City, 12,800′, 29 June. Jackson Co.: 5 mi. S. Walden, 11 July. Jefferson Co.: 10 mi. SE. Bailey, 12 June. Laramie Co.: Laramie R. Valley, Medicine Bow Mts., July. Mesa Co.: 7 mi. S. Glade Park, 21 June; Mud Sprgs., Pinyon Mesa, 8 June, 22 June. Mineral Co.: Creede, 9000′, 8 July; North of Creede, July. Montrose Co.: Buckeye Res., 5 mi. NE. Paradox, 19 May, 24 June. Park Co.: 5 mi. W. Bailey, U.S. 85, 8 July; 14 mi. E. Fairplay, 26 July; 12 mi. E. Fairplay, U.S. 85, 9 July; 3 mi. W. Fairplay, U. S. 85, 9 July. Routt Co.: 4 mi. SW. Gore Pass, Colo. 84, 21 June. Saguache Co.: Cochetopa Creek, 24 mi. SE. Gunnison, 10,700′, 27 June; 5 mi. E. Cochetopa Pass, 11,000′, 10 July. San Miguel Co.: Telluride, 11,400′, 20 July; 10 mi. N. Sawpit, 20 May. Summit Co.: Frisco, 18 July; 1 mi. W. Frisco. 25 July. CONNECTICUT. New Haven Co.: Branford. MASSACHUSETTS. Barnstable Co.: Wellfleet, 28-31 Aug. Middlesex Co. MINNESOTA. Polk Co.: 8 mi. SE Warren (Marshall Co.), 5 July. MONTANA. Carbon Co.: East Rosebud Canyon, numerous collections. NEW MEXICO. Rio Arriba Co. Sandoval Co.: Jemez Mts. SOUTH DAKOTA. County not given. Spring Creek, 11 mi. NE. Hill City, 29 June. UTAH. San Juan Co.: W. of Buckeye Reservoir (Montrose Co., Colo), 26 June. VERMONT. Windham Co.: S. Newfane, 17-26 June; Jamaica, 11 July. WYOMING. Fremont Co.: Twin Butte, 15 mi. NNE Pavillion, 7900′, 6 June. Teton Co.: Jackson Hole, numerous collections, late June—August.

Pardosa montgomeryi Gertsch

Pardosa montgomeryi Gertsch, W. J., 1934. Amer. Mus. Novit. 693:24. Gertsch, W. J., and H. K. Wallace, 1935, Amer. Mus. Novit. 794:3.

Female. Appearance in alcohol. Carapace generally glabrous. Median band and outer lateral bands yellow ochre. Inner lateral bands sienna brown marked with small wedges of dark brown with their bases at outer edge of band. Median band expanded posterior to eyes into a pair of rounded lobes. Thin dark lines border lobes in lateral dark band. Median band with two indistinct finger-like anterior extensions to middle of ocular quadrangle. Eye region dark sienna brown. Clypeus and sides of face yellow ochre, continuing without demarcation to outer lateral bands. Carapace edged with thin dark line. Abdomen with unbroken pale yellow or whitish median band and two dark grey lateral bands extending around sides of abdomen. Median band marked with a sienna diamond over heart, edged in grey. Dorsal sides of legs yellow ochre, femora marked with broken brown annulations. Ventral side paler than dorsal side, immaculate, except for subcutaneous patches of white in the abdomen.

Epigynum: (figs. 7, 8) Expanded base of median guide 1/3 to $\frac{1}{2}$ length of guide, tapering smoothly but fairly abruptly to anterior shank. Anterior shank thin and tapering anteriorly. Hood extending slightly over anterior end of median guide. From the posterior corners of hood, two arms extend caudad, parallel to sides of anterior shank. These arms are not always distinct. Sometimes, in addition, a pair of arms extend from the anterior corners of hood parallel to the anterior edge of epigastric plate, that is, perpendicular to posterior arms and main axis of the spider. Again these are not always distinct. Sides of expanded base convex, so that the posterior end is not the widest part. Epigynal plate wider than long with lateral lobes pointing laterally.

Male: Appearance in alcohol. Carapace of male slightly hirsute, median band yellow ochre to raw sienna, anterior end in middle of ocular quadrangle, widest posterior to eyes, and tapering slightly at posterior edge of carapace. Head glabrous, shiny, eye region dark brown to black. Inner lateral bands burnt sienna, with darker wedges pointing medially. Outer lateral bands yellow ochre

or raw sienna with dark line at edge of carapace. Abdomen with median band yellow ochre or light yellow. Diamond mark over heart more than half the length of abdomen, raw sienna or brown edged with dark grey. Sides dark brown or grey. Legs yellowish, femora darker, especially on first legs. Ventral side yellow, unmarked, except subcutaneous white patches on abdomen. Face, chelicerae and palpi brown.

Palpus: (Figs. 18, 21) Median apophysis moderately stout, bending strongly near base, elongate, with tip turning dorsad and resting on retrolateral margin of cymbium. A short stout spine at base of median apophysis turning ventrally. Embolus concealed behind tegulum. Terminal apophysis indistinct.

Diagnosis: *P. montgomeryi* resembles *P. xerophila* with which it is sympatric and *P. utahensis* with which it is probably allopatric. Females of *P. montgomeryi* have a much smaller expanded base of the median guide than do females of *P. utahensis*. The heart marking of *P. montgomeryi* is dark and the heart marking of *P. xerophila* is light. The females of these two species may also be distinguished by the shape of the epigynal plate. The epigynal plate of *P. montgomeryi* is wider than long with lateral lobes pointing laterally. The epigynal plate of *P. xerophila* is longer than wide and lateral lobes point anteriorly. The males of *P. montgomeryi* have a distinct light median band on the abdomen, by which they are easily separated from *P. xerophila*, which is marked with a dark, indistinct median band on the abdomen. Males of *P. montgomeryi* are distinguished from *P. utahensis* by the median apophysis which bends at the base in *P. montgomeryi* but arches anteriorly in *P. utahensis*.

Type locality: Given as Edinburg, Hidalgo Co., Texas, but this is undoubtedly incorrect and should be Camp Mary White, Otero Co., New Mexico (Gertsch, pers. comm.). (♂)

Distribution: Arizona, New Mexico, Durango. Probably not Texas. (fig. 4.)

Data from material examined: ARIZONA. Apache Co.: White Mts., 17 mi. NE. White River, 8-10 July. Cochise Co.: Rustler's Park, Chiricahua Mts., 3 July, 1 Aug. Coconino Co.: Flagstaff, July. NEW MEXICO. Otero Co.: Camp Mary White, 9-12 Aug. Sandoval Co.: Jemez Mts.

Pardosa orophila Gertsch

Pardosa orophila Gertsch, W. J., 1933, Amer. Mus. Novit. 636:28. (n. sp.) Gertsch, W. J., and H. K. Wallace, 1937, Amer. Mus. Novit. 919:3 (=*P. yavapa* Gertsch and Wallace, *non* Chamberlin).

Pardosa yavapa (*non* Chamberlin) Gertsch, W. J., and H. K. Wallace, 1935, Amer. Mus. Novit., 749: fig. 9. Gertsch, W. J., 1935, Amer. Mus. Novit. 792.:18 (part).

Female. Appearance in alcohol. *Pardosa orophila* is the most brightly colored spider of the *distincta* group. Ocular region dark brown across first two eye rows and between lateral eyes of second and third eye rows. Brown extending posteriorly and continuing as inner lateral bands. Median band beginning near second eye row, having either a straight anterior edge, or with two rounded lobes, and passing posteriorly to end of carapace. Posterior to third eye row it broadens out forming a round spot which is a bright cherry red. Median band constricted posterior to spot, then flaring slightly and tapering to posterior end of carapace. Color gradually changing from cherry red spot to yellow at posterior end. Inner lateral bands uniform dark brown, rather wide and with distinct edges. Narrow outer lateral bands yellow with broad brown line at margin of carapace. Median band of abdomen composed of several patches of color, all lighter than lateral bands. Heart marking light brown or rust, edged with dark brown. Two yellow diamonds lateral to anterior end of heart marking edged with brown. Lateral to posterior end of heart marking are two triangles edged with brown. Five or six pairs of triangles continue to spinnerets. The center of each triangle has a small dark spot bearing a thick dark hair. In older specimens this pattern gives the appearance of a light median band with transverse dark markings. Spider entirely clothed with light grey hair. Legs often quite red, especially patellae and tibiae, with irregular dark annulations. Legs also quite hairy, with conspicuous spines on dorsal sides of femora. Ventral side of female yellow, sternum marked with dark color, but with yellow median line. Coxae immaculate, yellow. Ventral side of legs generally dark. Abdomen yellow with a pair of darker lines running longitudinally, but they are not conspicuous since abdomen is clothed with light hairs. Clypeus red, as are sides of face below eyes. There is a "mustache" of white hairs on both sides of the face beginning posterior to first eye row and extending to the posterior eye row. The mustache is also found on immature males and females.

Epigynum. (figs. 9, 10) Expanded base of median guide about 1/3 the length of guide, with a small square posterior end. Two round lobes at anterior corners of expanded base, extending past base of anterior shank and lateral to it. Anterior shank with short narrow base, expanding anteriorly to form a large saddle-shaped platform. The platform is not quite twice as large as the expanded base. Shank not continuing anteriorly past the concave anterior edge of platform. Hood narrow, long and pointed posteriorly, overlapping raised platform slightly.

Male. (Not previously described) Appearance in alcohol. Median band of carapace beginning between second and third eye rows, expanding to a round spot posterior to eyes, and tapering to posterior end. Round spot bright cherry red, median band gradually changing to yellow ochre at posterior end. Eye region surrounding median band and wide inner lateral bands dark brown. Median band and inner lateral bands clothed with brown hair. Narrow outer lateral bands of carapace yellow and edged with wide dark band at margin. Abdomen with light median band composed of patches of color and lateral bands dark brown. Median band ranges from yellow to red. Heart area marked with brown diamond, edged with dark brown or dark grey. Two pairs of yellow or red diamonds or triangles edged with dark color, lateral to heart marking. Median band posterior to heart marking composed of five or six paired triangles of yellow or yellow ochre, edged with dark color. The center of each triangle with a small dark spot bearing a thick dark hair. Paired triangles separated by bands of red or brown. Abdomen clothed with yellowish or brownish hair. Dorsal side of legs red, especially patellae and tibiae, with irregular dark annulations, femora dark brown. Ventral surface of male light. Sternum brown with yellow median line. Center of abdomen yellow or rusty with dark patch in genital region. Ventral side of femora uniformly dark, all other segments light including coxae. Clypeus and sides of face below eyes red, and "white mustache" found on the female is brown and inconspicuous in male. Chelicerae and endites red marked with brown, palpi uniformly dark brown.

Palpus. (figs. 19, 22) Palpus somewhat long and narrow. Median apophysis extending diagonally across bulb toward distal end, tip of median apophysis turning dorsad and caudad at edge of cymbium. Base of median apophysis wide, but constricting greatly after leaving tegulum. Anterior edge of median apophysis straight, posterior edge convex, forming a large bulge in middle. Tip slender but tapered

only at end. Base of median apophysis bearing short hook-shaped process. Tegulum not especially enlarged, not overhanging cymbium. Embolus beginning at anterior end of bulb, extending caudad to tegulum, then turning laterally across palpus dorsal to median apophysis. Terminal apophysis a blunt wedge at base of embolus and not extending to midline of palpus.

Diagnosis: The cherry red spot posterior to the eyes usually serves to distinguish adults of *P. orophila* from other species in the *distincta* group. The epigynum of the female is characterized by the saddle-shaped platform of the anterior shank of the median guide. The palpus is characterized by the basal constriction and posterior bulge of the median apophysis. Immature specimens of *P. orophila* may be separated from *P. yavapa* by the white mustache on the sides of the face below the eyes. It is almost the only character which will separate immature members of the two species and is found on both immature males and females of *P. orophila*.

Type locality: Boulder Canyon, Boulder Co., Colorado. (♀)

Distribution: Arizona, New Mexico, and eastern side of Rocky Mountains in Colorado. (fig. 3).

Data from material examined: ARIZONA. Cochise Co.: Southwestern Research Station, 5 mi. W. Portal, 6-20 July, 5-15 Aug.; 7 mi. W. Portal, 4 Aug. Coconino Co.: Flagstaff, nr. base of Sunset Peak, 17 Aug. COLORADO. Boulder Co.: Eldorado Springs, 12-13 May, 4 Aug.; 5 mi. NW. Boulder, 7000′, 8 May, 26 May, 2 June, 8 June.; Boulder, 12 March. Custer Co.: Smith Creek, 7 mi. SW. Wetmore, 10 Aug. Fremont Co.: 8 mi. W. Canyon City, 4 Aug. Huerfano Co.: Dog Springs Arroyo, 16-19 June; 2 mi. N. Gardner, 16 June. Jefferson Co.: Plainview, 6 Apr., 20 Apr., 18 May, 27 May, 9 June. NEW MEXICO. Bernalillo Co.: Sandia Mts. Lincoln Co.: (two localities) Sandoval Co.: Jemez Mts. MEXICO, CHIHUAHUA. 10 mi. W. Namiquipa, 3 July; Sammil, W. Primavera, 7000′, 2 July. DURANGO: Otinapa, 7500′, 7 Aug.; Palos Colorados, 8000′, 5 Aug.; Puentes, 7500′, 23 July; Otinapa 8200′, 12 Aug.

Pardosa utahensis Chamberlin

Pardosa utahensis Chamberlin, R. V., 1919. Ann. Ent. Soc. Amer. 12:258 (n. sp.) Gertsch, W. J., 1934, Amer. Mus. Novit. 693:23 (=*distincta*). Gertsch, W. J., and H. K. Wallace. 1935. Amer. Mus. Novit. 794:1, 3 (≠*distincta*). Levi, H. W. and L. R. Levi, 1951. Zoologica 36:225. Lowrie, D. C. and W. J. Gertsch, 1955. Amer. Mus. Novit. 1736:5.

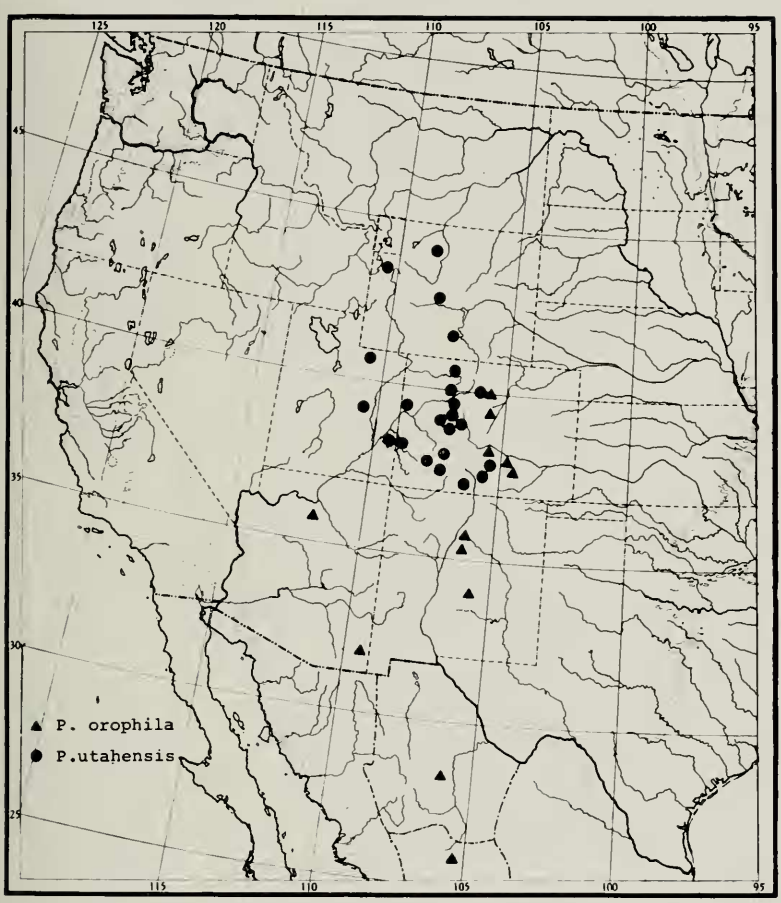


Figure 3. Distribution of *P. orophila* and *P. utahensis*. In Colorado the symbols represent county records, elsewhere they are usually single collections.

Female. Appearance in alcohol. Carapace marked with five longitudinal bands. Median band yellow or peach colored, beginning at posterior eye row, bulging slightly posterior to eyes, extending posteriorly to end of carapace with parallel sides. Inner lateral bands dark brown, with well-defined edges, outer lateral bands yellow with dark line at carapace margin. Ocular region brown, clothed with grey hair. Median band of abdomen yellow or yellow ochre. A brown or rust diamond outlined with dark grey marking the

heart area. Median band posterior to heart area with scalloped edges, and composed of indistinct paired circles. At the center of each circle is a dark spot bearing a thick dark hair. Lateral bands of abdomen brown becoming lighter at lateral edges. Abdomen clothed with light hair. Dorsal side of legs tan, noticeably hairy and spiny. Ventral side of spider yellow, immaculate, but clothed with long black hair especially on sternum and legs. Face yellow.

Epigynum. (figs. 11, 12) Expanded base of median guide about 2/3 the length of guide. Expanded base flaring slightly from posterior edge for nearly its length, then tapering abruptly to anterior shank. Anterior shank wide adjacent to expanded base and tapering to a narrow stem at anterior end, usually causing a secondary pair of shoulders on the median guide. Hood rounded on posterior margin, and often trilobed. Anterior edge of hood not raised above epigynal plate.

Male. Appearance in alcohol. Carapace and dorsum of abdomen similar to female. Median band tends to be darker, sometimes with a rusty spot posterior to eyes. Legs brown and hairy. Ventral side pale, or darker than female. Sternum sometimes with dark blotches. Clypeus, sides of face and chelicerae yellow or brown. Palpi dark brown.

Palpus. (figs. 23, 26) Median apophysis extending diagonally across bulb toward distal end, tip of median apophysis turning dorsad and slightly caudad at edge of cymbium. Median apophysis with bulge at midsection and arching anteriorly. Base of median apophysis with hook-shaped process turning ventrally. Tegulum wider than long, with an anterior bulge at middle of its anterior edge covering base of median apophysis. Terminal apophysis a short blunt hook.

Diagnosis: The females of *P. utahensis* resemble those of *P. distincta*. *P. utahensis* is a darker yellow, and the median band on the abdomen is darker than the median band on the carapace. In *P. distincta* the median band is the same color on both tagmata. The epigyna will usually separate the two species. In *P. utahensis* the anterior edge of the expanded base of the median guide tapers to the anterior shank, and in *P. distincta* the anterior edge is convex anteriorly, forming a pair of shoulders. In *P. utahensis* the anterior shank usually has a secondary pair of shoulders which *P. distincta* lacks. The epigynum of *P. utahensis* cannot always be distinguished from that of *P. yavapa*. The shape of the median band on the

carapace will separate females. In *P. utahensis* the median band has parallel sides at the posterior end, and in *P. yavapa* it tapers to a point. This same character is also used to separate males of the two species, which, again, cannot always be separated by their palpi. The male of *P. utahensis* can be distinguished from other males of the *distincta* group by the anterior arch of the median apophysis of the palpus. *P. utahensis* is probably allopatric with *P. montgomeryi* and *P. xerophila* and is clearly separable by genitalia from these 2 species.

Type locality: Chalk Creek, Summit Co., Utah. (♀)

Distribution: Utah, Colorado, Wyoming as far north as Yellowstone Park. (fig. 3)

Data from material examined. COLORADO. Alamosa Co.: Mosca Pass, 9300′, Sangre de Cristo Mts., 8 July. Boulder Co.: 4 mi. SW. Boulder, 11 May, 3-4 June, 19 June; 3 mi. NW. Ward, 27 July; 2 mi. S. Ward, 6 Aug, 8 Aug.; 4 mi. W. Jamestown, 6 Aug. Chaffee Co.: O'Haver L., 11,000′, Sawatch Mts., 10 July; Cottonwood Crk., 10,000′, Sawatch Mts., 5 July. Conejos Co.: 7 mi. W. Antonito, 9 July. Custer Co.: Lake Crk., Sangre de Cristo Mts., 12 July. Eagle Co.: 10 mi. N Wolcott, 21 June. Grand Co.: Troublesome Crk., 11 July; 2 mi. W. Parshall, 12 July. Gunnison Co.: 1 mi. S. Gunnison, 7600′, 12 Aug.; Crested Butte, 9000′, 8 Aug.; Taylor Res., 12,000′, 29 June. Hinsdale Co.: 40 mi. W. Creede, 9600′, 16 July; 45 mi. W. Creede, 10,000′, 16 July; 1 mi. S. Spring Crk. Pass, 6 July; San Cristobal L., 9200′, 2 Aug. Jackson Co.; 5 mi. S. Walden, 11 July. Lake Co.: W. of Twin Lakes, 11,000′, 24 July. Mesa Co.: 7 mi. S. Glade Park, 21 June; Grand Junction, June, July; Grand Mesa, June, July. Mineral Co.: Creede, 9000′, 8 July. Montrose Co.: Buckeye Res, 5 mi. NW. Paradox, 19 May, 29 June. Park Co.: 2 mi. E. Fairplay, 29 Aug. Saguache Co.: Gold Basin Rd., 10 mi. S. Gunnison, 8200′, 18 June; 5 mi. E. Cochetopa Pass, 10 July. UTAH. Garfield Co.: 9-step Crk., Aquarius Plateau, 17 Aug. San Juan Co.: W. of Buckeye Res. (Montrose Co., Colo.), 25 June. Sevier Co.: Fish Lake, 1 July. Summit Co.: Chalk Creek, 8000′ (paratype), date unknown; Mill Creek, Uinta Mt., 21 Aug. County not given. Wildcat Ranger Sta. 15 mi. N. Boulder, 2 July. WYOMING. Carbon Co.: 5 mi. E. Medicine Bow, 29 June. Fremont Co.: Twin Buttes, 15 mi. NE. Pavillion, 6 June. Teton Co.: Many localities in Jackson Hole, late July—early Aug. Washakie Co.: 11 mi. SW. Worland, 14 July.

Pardosa xerophila Vogel, new species

Female. Appearance in alcohol. Dorsal side of carapace with five longitudinal bands. Eye region dark brown. Median band yellow ochre, beginning in middle of ocular quadrangle and extending to posterior edge of carapace. Median band parallel-sided. Inner lateral bands brown with dark brown wedges, their bases on lateral edge of band. Outer lateral bands yellow ochre. Carapace edged with

black. Dorsum of abdomen with yellow median band. Heart marked with diamond more than 1/2 the length of abdomen. Diamond yellow or peach, edged with dark gray trailing posteriorly. Lateral bands brown or gray and narrow so that yellow of sides shows dorsally. Lateral margin of lateral bands not distinct. Dorsal sides of legs yellow ochre, spiney, and clothed with fine brown hair. Distal ends of fourth tibiae brown. Ventral side yellow, unmarked except for subcutaneous white patches on abdomen. Face dark brown above first eye row. Clypeus and sides of face pale yellow. Chelicerae yellow ochre, unmarked. Spines on ventral side of tibia I 2-2-2. The distal pair is about 1/3 the length of the other pairs of spines.

Epigynum. (Figs. 13, 14). Epigynal plate longer than wide. Expanded base of median guide about 1/3 the length of guide, with rounded anterior shoulders, flat base. Anterior shank thin, long, and tapering anteriorly. Hood small thick crescent at end of median guide.

Male. Appearance in alcohol. Carapace of male glabrous, almost uniformly chestnut brown, median and outer lateral bands only slightly lighter. Median band lobed posterior to posterior eye row as in female. Posterior portion of median band with dark hastate mark, and parallel-sided. Inner lateral bands marked with dark wedges as in female, their bases forming the ectal margin of inner lateral bands. Outer lateral bands little lighter than inner lateral bands, but fairly wide and with dark border at carapace margin. Abdomen fairly uniform in color, with no particular separation into median and lateral bands. Color dark grey overlaid on yellow, which shows through as pockmarks. Heart marked with brown diamond outlined in dark grey, median band continuing posteriorly as a row of overlapping triangles, outlined in grey, their apices pointing anteriorly. Ventral side of spider light. Sternum golden yellow and venter with dark markings in genital region. Abdomen with subcutaneous patches of white pigment. Clypeus, sides of face and chelicerae chestnut, but chelicerae streaked with yellow. Palpi chestnut.

Palpus. (figs. 24, 27). Median apophysis extending across bulb at right angles to long axis, and turning dorsad over edge of cymbium. Median apophysis somewhat stout and with a bulge at middle of its posterior edge. Embolus short, extending caudad from its anterior base, turning across bulb but not extending to median apophysis. Terminal apophysis lacking distinctive shape. Tegulum somewhat flattened posteriorly and bulging on side away from median apophysis.

Diagnosis: *P. xerophila* may resemble *P. distincta* and *P. utahensis* but is probably allopatric to them. Genitalia will serve to separate *P. xerophila* from these two species. *P. xerophila* and *P. montgomeryi* are usually sympatric and are difficult to separate. The females of *P. xerophila* have a light mark over the heart and *P. montgomeryi* have a dark mark. The epigynum of *P. xerophila* is usually longer, the anterior shank longer in proportion to the base, and the lateral lobes of the epigynal plate point anteriorly. The lateral lobes of the epigynal plate of *P. montgomeryi* point laterally. The males of *P. xerophila* are dark and have the median band of the abdomen obscured which separates them from males of *P. montgomeryi* in which the median band of the abdomen is light and distinct. Males of *P. xerophila* can be distinguished from *P. yavapa* by the shape of the median band of carapace which tapers to a point in *P. yavapa,* but has parallel sides in *P. xerophila.* The palpi are distinct.

Type: Female holotype from White Mountain Reservoir, east of McNary, Apache Co., Arizona, 8 July 1940 (leg. W. J. Gertsch). Four paratypes, females, same data as the holotype; holotype and 3 paratypes in the American Museum of Natural History, 1 paratype in the Yale Peabody Museum.

Distribution: Arizona, New Mexico, Chihuahua, Durango. (fig. 4)

Data from material examined: ARIZONA. Apache Co.: White Mt. Res., E. of McNary, 8 July 1940. NEW MEXICO. Otero Co.: Camp Mary White, 9-12 Aug. Sandoval Co.: Jemez Mts.

Pardosa yavapa Chamberlin

Pardosa yavapa Chamberlin, R. V., 1925, Bull. Mus. Comp. Zool. 67:231 (n. sp.). Gertsch, W. J., 1934, Amer. Mus. Novit. 693:24 (=*saniuana*); 1935, Amer. Mus. Novit. 792:18 (part). Gertsch, W. J., and H. K. Wallace, 1935, Amer. Mus. Novit. 794:3.

Pardosa saniuana Chamberlin, 1928, Canad. Ent., 60:94 (n. sp.).

Female. Appearance in alcohol. Median band of carapace beginning at posterior row of eyes, sometimes with anterior projections, bulging posterior to eyes forming a round spot, constricting then bulging laterally again, and tapering to nearly a point at posterior margin of carapace. Median band sienna anteriorly, changing to

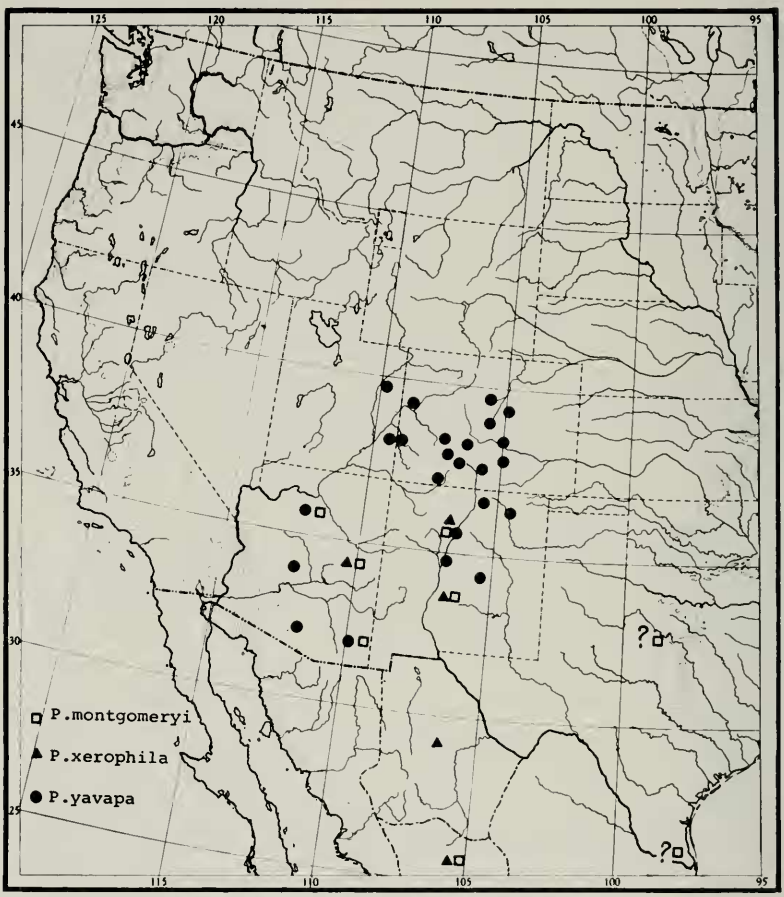


Figure 4. Distribution of *P. montgomeryi*, *P. xerophila* and *P. yavapa*. In Colorado the symbols represent county records, elsewhere they are usually single collections.

yellow ochre posteriorly. Eye region rich dark brown and glabrous. Inner lateral bands rich dark brown and wide, extending nearly to carapace edge. Outer lateral bands lighter and broken by patches of dark brown, or entirely obscured. Median band on abdomen light and composed of sienna or rust colored patches. Heart area marked with brown diamond outlined in black. Paired diamonds or triangles outlined in black posterior and lateral to heart. The center of each triangle with dark spot bearing a thick dark hair. Lateral abdominal

bands dark gray over rust, giving brown appearance. Dorsal side of legs sienna with dark gray annulations on all segments. Ventral side of spider more or less light. Sternum and abdomen may be marked with dark blotches. Coxae often yellow. Annulations on legs may extend to ventral side. Clypeus sienna or rust, sides of face brown, chelicerae and palpi marked with dark brown.

Epigynum: (figs. 15, 16) Expanded base of median guide usually less than half the length of guide. Posterior edge of expanded base straight, sides bulging slightly. Anterior shank constricting anterior to expanded base, bulging and constricting just posterior to hood. The bulge in the anterior shank is supported by a ramp to the epigynal plate. The sides of the ramp taper from the shank to the epigynal plate. The overall appearance of the median guide is a somewhat distorted hourglass. Hood roughly a trapezoid.

Male. Appearance in alcohol. Carapace dark and glabrous. Median band dark chestnut with the same shape as in female, tapering to nearly a point at posterior edge of carapace. Inner lateral bands mahogany, extending to edge of carapace, completely obscuring outer lateral bands. Ocular region mahogany and glabrous. Pattern on abdomen often more or less obscured, heart area a rich red-brown outlined with dark grey. Dorsal side of legs light or dark with indistinct annulations. Ventral side of spider more or less marked with dark grey, coxae usually yellow. Face and chelicerae mahogany, except for median anterior edges of chelicerae which are yellow. Palpi mahogany.

Palpus. (figs. 25, 28) Median apophysis of palpus not strongly diagonal as it crosses bulb: tip turning dorsad and slightly caudad at edge of cymbium; quite thick at midsection, and tapering to a stout point at tip; base bearing hook-shaped process turning caudad. Tegulum covering less than one quadrant of bulb, having a nearly square corner at center of bulb. Embolus extending in posterior direction, then turning across bulb dorsal to median apophysis. Terminal apophysis indistinct.

Diagnosis: The shape of the median apophysis of the male palpus of *P. yavapa* distinguishes it from all other males of the *distincta* group except *P. utahensis*. The "hourglass" shape of the median guide of the epigynum distinguishes the female of *P. yavapa* from other females except *P. utahensis*. In both sexes these two species can be separated by the shape of the median band on the

carapace. In *P. yavapa* the sides of the posterior part of the median band taper to nearly a point, and in *P. utahensis* the sides of the median band are parallel.

Type locality: Yavapai Co., Arizona (stomach of toad) (♀)

Distribution: Arizona, New Mexico, Utah, Colorado. (fig. 4).

Data from material examined. ARIZONA. Cochise Co.: Barfoot Peak, 6 July, 1 Aug., 22 Aug.; Rustler's Park, 3 July; Carr Cyn., Huachuca Mts. 22 July, 31 July; Promontory Butte, 1 Sept.; Mt. Lemmon, W110.45, N32.25, 21 May. Coconino Co.: N. Rim Grand Canyon, 15 July. Pima Co.: Summer Haven, 21 May, 14 July. COLORADO. Alamosa Co.: Mosca Pass, 9300′, Sangre de Cristo Mts., 8 July. Archuleata Co.: Piedra, 7000′, 21 July. Boulder Co.: Eldorado Springs, 13 May, 20 May, 3 Aug.; 4 mi. SW. Boulder, 11 May, 4 June, 19 June; Boulder, 14 March, 19 March, 7 May; 4 mi. NW. Boulder, 7000′, 30 April, 8 May, 26 May, 2 June, 8 June; 3 mi. SW Altona, 4 Aug. Chaffee Co.: O'Haver L., 11,000′, Sawatch Mts., 10 July; Maysville, 14 Aug. Custer Co.: Smith Crk., 7 mi. SW. Wetmore, 10 Aug.; Alvarado Creek, 11,000′, 12 July; Lake Creek, Sangre de Cristo Mts., 12 July; Sangre de Cristo Mts., 12 July. Douglas Co.: Devil's Head, 8000′, 15 July. Fremont Co.: Hayden Creek, 7900′ Sangre de Cristo Mts. 11 July. Gunnison Co.: Crystal Cyn., Elk Mts., 9500-11,000′, 3 Aug. Jefferson Co.: 10 mi. SE. Bailey, 6900′, 12 June; Plainview, 18 May, 27 May, 9 June. Mesa Co.: 17 mi. NE. Gateway, 23 June. Mineral Co.: West Fork Crk., 7800′, 20 July. Montrose Co.: N. rim of Black Canyon of the Gunnison R., 29 July; Buckeye Res. 5 mi. NW. Paradox, 26-28 June. Sagauche Co.: 5 mi. E. Cochetopa Pass, 10,000′, 10 July. NEW MEXICO. Bernalillo Co.: Sandia Mts.; Cienega Cyn., Sandia Mts. Lincoln Co. Rio Arriba Co. Sandoval Co.: Jemez Mts. San Miguel Co.: Las Vegas, Camp Luna, 11 June. Taos Co. UTAH: San Juan Co.: W. of Buckeye Res. (Montrose Co., Colo.), 28 June. County not given. Wildcat Ranger Sta., 15 mi. N. Boulder, 2 July.

SUMMARY

The *distincta* group of the genus *Pardosa* is composed of six species which are highly similar in color pattern, genitalia and habitat. The species are described, including *Pardosa xerophila* Vogel, new, and the first description of the male of *P. orophila*. Distribution maps and collection records are given; and a key for separating adult specimens of this group.

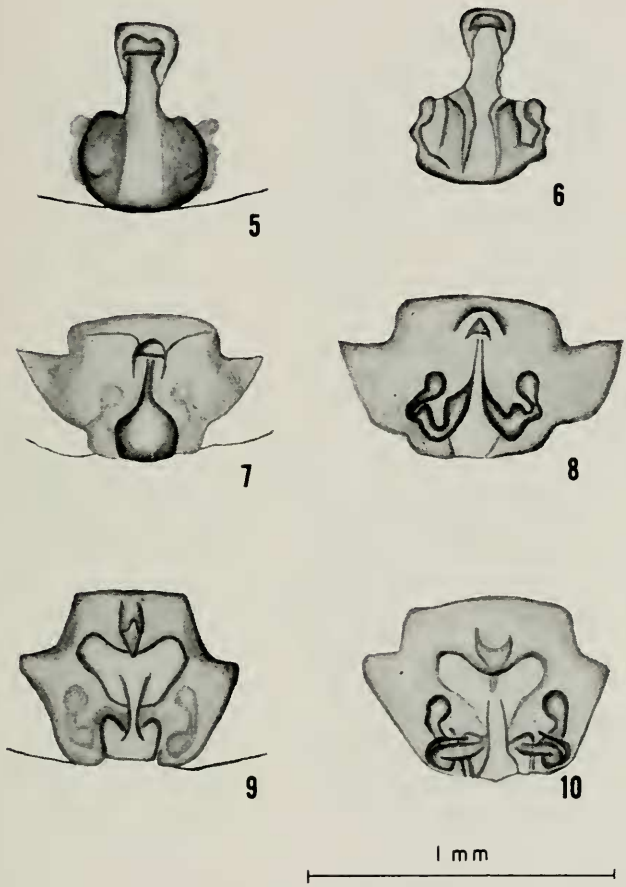


Plate I—Figs. 5, 6. *Pardosa distincta*. 5. Epigynum, ventral 6. Epigynum, dorsal.

Figs. 7, 8. *P. montgomeryi*. 7. Epigynum, ventral. 8. Epigynum, dorsal.

Figs. 9, 10. *P. orophila*. 9. Epigynum, ventral. 10. Epigynum, dorsal.

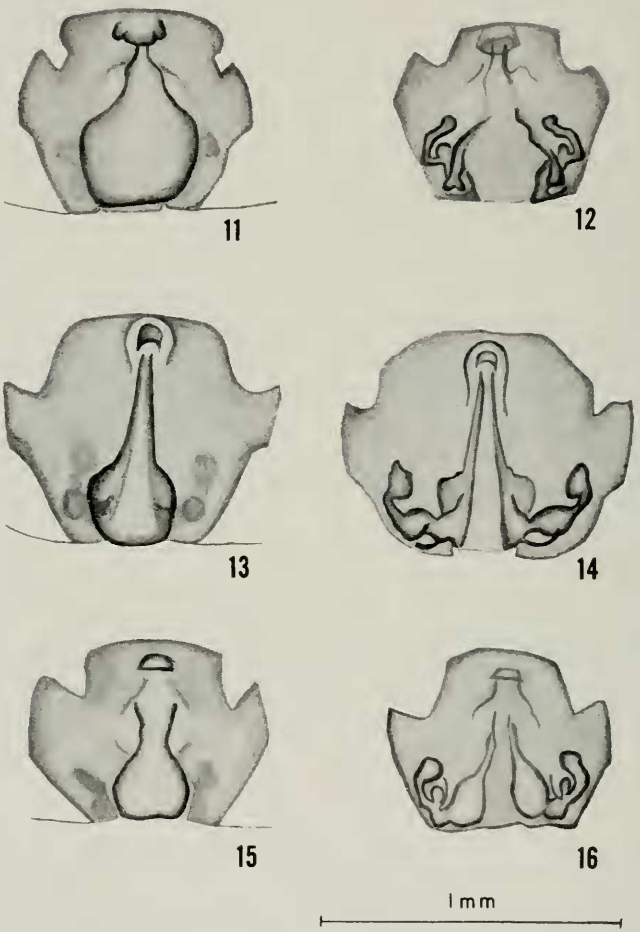


Plate II—Figs. 11, 12. *Pardosa utahensis*. 11. Epigynum, ventral. 12. Epigynum, dorsal.

Figs. 13, 14. *P. xerophila*. 13. Epigynum, ventral. 14. Epigynum, dorsal.

Figs. 15, 16. *P. Yavapa*. 15. Epigynum, ventral 16. Epigynum, dorsal.

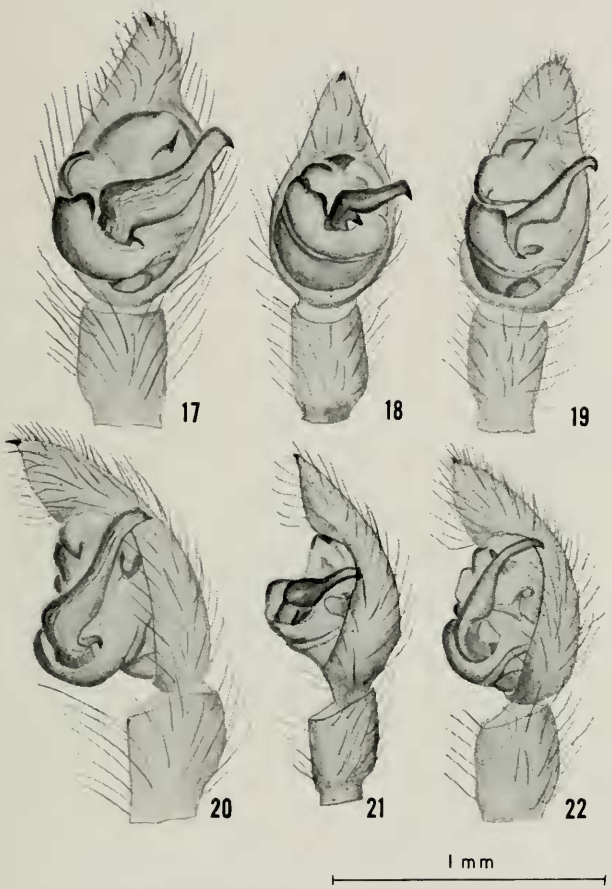


Plate III—Fig. 17. *Pardosa distincta,* left palp of male, ventral.
Fig. 18. *P. montgomeryi,* left palp of male, ventral.
Fig. 19. *P. orophila,* left palp of male, ventral.
Fig. 20. *P. distincta,* left palp, retrolateral.
Fig. 21. *P. montgomeryi,* left palp, retrolateral.
Fig. 22. *P. orophila,* left palp, retrolateral.

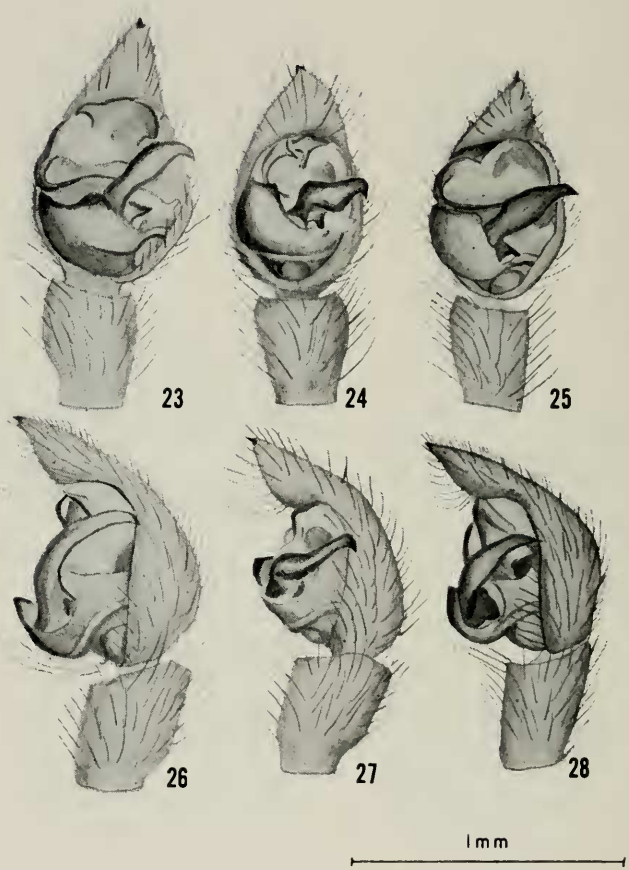


Plate IV—Fig. 23. *Pardosa utahensis,* left palp of male, ventral.
Fig. 24. *P. xerophila,* left palp of male, ventral.
Fig. 25. *P. yavapa,* left palp of male, ventral.
Fig. 26. *P. utahensis,* left palp, retrolateral.
Fig. 27. *P. xerophila,* left palp, retrolateral.
Fig. 28. *P. yavapa,* left palp, retrolateral.